British Museum labelled "Jamaica" there may be an error. The two specimens with thirty-one pairs may be from the mainland and be *P. Edwardsii*. The other may be a true Jamaica species.

The following questions arise :—

Is there a St.-Thomas species with twenty-eight pairs of feet?

A Jamaica species with thirty-seven?

A St.-Vincent species with thirty-three?

P. Edwardsii with thirty-one, with twenty-nine and thirty sometimes?

A Chilian species with nineteen or twenty-seven or thirty-two?

A Cape species with fourteen and another with seventeen? or are these the same?

In the Australian and New-Zealand species the number of feet seems fixed. Mr. Wood-Mason has informed me that he has obtained a new species from the Cape, which he will shortly describe. I trust that he and Prof. Perceval Wright may be able by more careful investigation of the various forms to clear up the confusion which certainly prevails as yet with regard to the species of this isolated genus.

XXXI.—*On the Bryozoa (Polyzoa) of the Bay of Naples.*

By Arthur Wm. Waters, F.G.S.

[Plates XXIII. & XXIV.]

[Continued from p. 202*.]

Cyclostomata.

The classification of the Cyclostomata is even more difficult than that of the Cheilostomata, which partly arises from there being fewer characteristics upon which it can be grounded.

The winter time, when I made the collection, seems to have been specially unfavourable for studying this suborder; for I seldom received colonies with active polypides, and I have been surprised to find what a large number have no œcia.

We shall probably ultimately have to adopt an arrangement with the Cyclostomata somewhat similar to that introduced by

* *Note to page* 199.—I find there is a fifth genus *Buskia*, created by the Rev. Tenison Woods, in Proc. Roy. Soc. Tasmania, 1876. This has already been shown by Mr. Etheridge, Jun., to be a duplicate name.

Prof. Smitt for the Cheilostomata, and indicate the mode of growth as stadia: thus compound colonies of *Discoporella* form *Radiopora*; *Alecto*, *Entalophora*, *Tubulipora*, *Idmonea* have their allies erect and adnate.

78. *Crisia cornuta*, L.

Crisia cornuta, Smitt, var. *a*, Krit. Fört. 1864, p. 115.
Crisidia cornuta, var. *geniculata*, Busk, Mar. Polyz. pt. iii. p. 3, pl. i. figs. 1, 4.

Hab. Scandinavia, Finland, Greenland (*Sm.*); Britain and France (*B.*); Naples, rare.

79. *Crisia producta*, Smitt.

Crisia producta, Smitt, Krit. Fört. öf. Sk. Hafs-Bry. 1864, p. 116, pl. xvi. figs. 4, 5, 6.
Crisia eburnea, var. *producta*, Norm. Rep. of the Shetland Crust. &c., Brit. Assoc. Rep. 1868, p. 309.

Some parts closely resemble the last variety; but it is very variable: sometimes an internode occurs near the growing extremity with only one cell; others adjoining have from two to six. It is larger than the last, with cells half as large again, and longer. Ovicell axillary.

As there are connecting links between this and *cornuta*, it might well be called *C. cornuta*, var. *producta*, or even *C. geniculata*, var. *producta*.

Hab. Scandinavia (*Sm.*); Shetland, 100–170 fathoms (*Norm.*); Naples, littoral, among seaweeds, rare.

80. *Crisia fistulosa*, Heller (non Busk).
(Pl. XXIII. fig. 3.)

Crisia fistulosa, Heller, Die Bry. des Adriat. Meeres, p. 118, pl. iii. fig. 5.
? *Crisia eburnea*, Smitt (pars), Kr. Fört. öf. Sk. Hafs-Bry. 1864, pl. xvi. fig. 7.
Crisia Haueri, Reuss, Foss. Poly. des W. T. B. p. 54, pl. vii. figs. 22, 24.
? *Crisia eburnea*, Manzoni, I Bri. foss. del Mioc. d'Austr. ed Ungh. p. 3, pl. i. fig. 1.

This would certainly seem to be the species thus named by Heller; and the one so called by Mr. Busk is quite different, and does not at all correspond with Heller's figure or description. Prof. Heller's comparison with *C. geniculata* would be most inappropriate for the *C. fistulosa* of Busk, whereas for the present form it is apparent.

Loc. Miocene: Nussdorf, Berchtoldsdorf, Wieliczka. Pliocene: Rhodes (*M.*). Living: Naples.

81. *Crisia elongata*, M.-Edw. (Pl. XXIII. fig. 1.)

Crisia elongata, M.-Edw. Sur les Crisies &c. p. 202, pl. vii. fig. 2, Ann. des Sc. Nat. 2e sér. vol. ix.

Crisia attenuata, Heller, Die Bry. des Adr. Meeres, p. 117, pl. iv. figs. 1, 2.

The great length of the internodes and the fewness of the branches make it appear extremely delicate and narrow; and it created surprise, upon measurement, to find it as wide as species appearing much thicker. Branches arising at the fifth to fifteenth zoœcium.

Hab. Adriatic (*H.*), 35–55 fathoms; Naples, 40 fathoms.

82. *Crisia elongata*, var. *angustata*. (Pl. XXIII. fig. 4.)

Crisia fistulosa, Busk (non Heller), Mar. Polyz. pt. iii. p. 5, pl. vi. A. figs. 1, 2.

?*Crisia Edwardsii*, Reuss, Die foss. Polyp. Wiener T. p. 53, pl. vii. fig. 20.

?*Crisia Edwardsii*, Manzoni, I Bri. foss. del. Mioc. d'Austr. ed Ungh. pt. iii. p. 4, pl. i. fig. 2.

Fourteen to twenty-six zoœcia between the joints of the same branch; branches arising usually from the fifth to eighth zoœcium of a branch; and at about the same distance a fresh branch grows on the other side.

This differs from *elongata* in having more branches, which arise from nearer the joint, and is usually slightly more slender. The zoœcia are 0·04 millim. apart. This looks much like the fossil *Crisia Edwardsii*; but it is difficult from fragments to decide between this and the last variety.

Hab. Naples, shallow and deep water.

83. *Crisia denticulata*, Lamx. (Pl. XXIII. fig. 2.)

84. *Crisia eburnea*, L.

85. *Idmonea atlantica*, Forbes.

Idmonea atlantica, Manzoni, I Bri. foss. del Mioc. d'Austr. ed Ungh. p. 5, pl. ii. fig. 6.

Idmonea gracillima, Reuss (non Busk), Die foss. Anth. und Bry. der Schicht. von Crosaro, Denkschr. k.-k. Akad. Wien, vol. xxix. p. 70, pl. xxxv. figs. 1, 2.

Mr. Busk seems to have overlooked the fact that Reuss had named a fossil *Idmonea gracillima*; and therefore the name given to a species in the British Museum (Cat. p. 14) will have to be changed.

Specimens I have from the Val di Lonte correspond with recent *atlantica*.

Loc. Miocene: Eisenstadt, Steinabrunn, Val di Lonte, Montecchio, Maggiore (Italy). Living: Arctic Seas, Shetland; Naples, 40 fathoms (only one piece).

86. *Idmonea marionensis*, Busk.

Idmonea marionensis, Busk, Cat. Mar. Polyz. p. 13, pl. xiii. figs. 3–5, pl. vii. figs. 7, 8.

The British-Museum specimen has four cells in a series, although the diganosis in the Catalogue gives two to three. I have a few specimens from Naples, one of which exactly corresponds with the Museum specimen.

It differs from *I. atlantica* chiefly in the series being further apart (viz. 0·7 millim.). The dorsal surface is usually round; but this varies with age.

I have a species, in habit much resembling the typical *marionensis*, which has six cells in a series and the dorsal surface flat.

This is not the *Crisina Hochstetteriana* of Stoliczka, fossil from New Zealand, which has large pores somewhat resembling those common in *Hornera*.

Hab. Marion Island, 80 fathoms (*B.*); Naples, 40 fathoms, not common.

From the diagnosis it would seem as if Mr. Busk had written it from some material more nearly corresponding with *Crisina Hochstetteriana*, Smitt (non Stol.), than the specimen mounted, which has cells all down the two sides.

87. *Idmonea irregularis*, Menegh.

Idmonea irregularis, Meneghini, Polipi della fam. dei Tubul. p. 12; Acad. di Sc. di Padova, vol. vi.
Idmonea irregularis, Heller, Die Bry. des Adriat. Meeres, p. 121.
Idmonea irregularis, Busk, Cat. Mar. Polyz. pt. iii. p. 13, pl. xii.
?*Filisparsa Pourtalesii*, Smitt, Floridan Bryozoa, p. 9.

Zoarium dichotomously branched; branches round; mostly four cells in each lateral series, the outside cells the longest; these are nearly at right angles to the axis of the zoarium, and are very prominent and conspicuous; dorsal surface rounded, and the divisions of the cells inconspicuous. Cells between the lateral series irregularly placed.

Hab. Adriatic (*M.* & *H.*); Mediterranean (*B.*); Naples, common, from 40 fathoms; Tortugas? (*Sm.*).

88. *Idmonea Meneghinii*, Heller.

Idmonea Meneghinii, Heller, Die Bry. des Adriat. p. 120, pl. iii. figs. 6, 7.

The dorsal surface is normally flat, or slightly concave and striated; but the growing ends are convex, as is also the basal

portion. The end fronds have only two cells in each series, while the older portions have usually four or five. The series are 0·4 millim. or slightly wider apart, with very long and raised cells.

Fragments of such a form, if found fossil, would probably be made into more than one species.

Living: Adriatic (*H.*); Naples, 40 fathoms, not very common.

89. *Idmonea triforis*, Heller.

Idmonea triforis, Heller, Die Bry. des Adriat. Meeres, p. 120.

This is a smaller and more delicate species than the last, and is distinguished by having three cells in a series. These are 0·5 millim. or more apart. The dorsal surface is concave, with the ends convex.

Hab. Adriatic, 20–55 fathoms (*H.*); Naples, 40 fathoms, rare.

90. *Idmonea concava*, Reuss.

Idmonea concava, Reuss, Die foss. Anth. und Bry. der Schicht. von Crosaro, Denkschr. k.-k. Ak. Wien, vol. xxix. p. 70, pl. xxxv. figs. 3, 4.

The dorsal surface is distinctly striated and usually slightly concave; but the growing ends are convex.

The zoarium, after growing straight for about 7 millims., divides dichotomously at an angle of about 60°, and sometimes divides again after growing for about 4 millims. There are usually four cells in a series; the cells are long and project laterally; the series are a little more than half a millim. apart.

This corresponds with specimens I have from the Val di Lonte, &c.

Loc. Miocene: Val di Lonte, Montecchio-Maggiore (*Rss.*). Living: Naples, 40 fathoms.

91. *Tubulipora serpens*, Linn.

Tubulipora serpens, Smitt, Krit. Fört. öf. Sk. H.-Bry. 1865, p. 399, pl. iii. figs. 1–5, pl. ix. figs. 1, 2.

Idmonea serpens, Manzoni, Bry. foss. Ital. cont. 4, p. 27, pl. vi. fig. 32, et I Bri. del Plioc. di Castrocaro, p. 42, pl. vi. fig. 78.

Obelia tubulifera, Lamx. Expos. Méth. p. 81, pl. lxxx. figs. 7, 8.

The specimens I have are adnate on seaweed and are only from 3–6 millims. long, commencing with a single zoœcial tube. The colony rapidly widens; on each side of the median line much raised regular series with six cells in a series; cells closely joined. Some specimens divide dichotomously. This is smaller and more regular than *T. phalangea*, which has the zoœcial tubes free at the end.

This is sometimes reddish; but this should not be made a specific character, for at Naples *Filisparsa tubulosa*, *Entalophora proboscidea*, *Idmonea concava*, &c. are found both red and white.

Loc. Pliocene: Ficarazzi (Sicily), Castrocaro. Living: Northern Seas; Naples, on seaweed, from 2 fathoms and also 20–30 fathoms; Adriatic (*Heller*).

92. *Tubulipora phalangea*, Couch.

Tubulipora phalangea, Busk, Cat. Mar. Polyz. pt. iii. p. 25, pl. xxiii. fig. 2.

The specimens I have from Naples are strap-shaped or formed of elongated lobes. The tubular cells are very long, with a tendency to form in series; the ends of the tubes are free. This is the *T. serpens* of some authors; but there does not seem any hard and fast line by which *serpens* can be separated from *phalangea*, which also passes into *flabellaris*.

Naples, on *Pinna*, from considerable depth.

93. *Tubulipora incrassata*, D'Orb.

Tubulipora incrassata, Smitt, Krit. Fört. öf. Sk. 1866, p. 402, pl. v. figs. 1–7, pl. vi. fig. 1.

The zoœcial tubes are about 0·16 millim., which is smaller than in the northern form.

Hab. Arctic Seas generally (*Sm.*).

94. *Diastopora latomarginata*, D'Orb.
(Pl. XXIV. fig. 12.)

Diastopora latomarginata, D'Orb. Pal. Franç. p. 827, pl. 758. figs. 10–12.
Diastopora hyalina, var. *latomarginata*, Smitt, Krit. Fört. 1866, p. 397.
Tubulipora complanata, Menegh. Polipi della fam. dei Tubulip. p. 6.
Discosparsa complanata, Heller, Die Bry. des Adriat. p. 122.
?*Diastopora sparsa*, Manzoni, I Bri. foss. del Mioc. d'Austr. ed Ungh. pt. iii, 1877, p. 14, pl. xiii. fig. 51.

Colony orbicular, 10–15 millims. in diameter, with zoœcial tubes, indistinctly radial, short in the centre, very long and raised towards the edge; no adventitious tubuli; oœcial apertures (*a*) small, not much raised. In the centre is often a small, round or triangular, open space; and from this can be seen that the growth is similar to *Tubulipora flabellaris*; and it might with equal propriety be called *Tubulipora* or *Diastopora*, though, in fact, it would seem most reasonable to call it *T. flabellaris*, var. *latomarginata*. I have specimens confluent; but this is, perhaps, accidental, arising from independent colonies joining.

Hab. Arctic Seas (*Sm.*); Adriatic (*H.*); Australia (*D'Orb.*); Naples, deep water.

95. *Diastopora flabellum*, Reuss.

Diastopora flabellum, Reuss, Die foss. Poly. der Wien. Tertiärb. p. 51, tab. vii. fig. 9.
Diastopora flabellum, Manzoni, I Bri. foss. del Mioc. d'Austr. ed Ungh. pt. iii. p. 14, pl. xiii. fig. 52.
Diastopora simplex, Busk (non D'Orb.), Crag Polyz. p. 113, tab. xx. fig. 10; id. Mar. Polyz. pt. iii. p. 28, pl. xxix. figs. 3, 4.
?*Diastopora simplex*, Smitt, Krit. Fört. 1864, p. 396, pl. viii. figs. 7, 8.

Although the ends of the zoœcia project, I think we are justified in uniting it with *D. simplex*; but that name cannot be retained, as D'Orbigny called a fossil *D. simplex*; and although the genus was afterwards changed by him to *Discosparsa*, it would now be *Diastopora* or *Discoporella*.

Loc. Miocene: Eisenstadt, Wildon, &c. Pliocene: Crag. Living: Northern Seas (*Sm.*); Britain generally; Naples, 2–6 fathoms.

96. *Diastopora obelia*, Johnst.

Diastopora obelia, Busk, Cat. Mar. Polyz. pt. iii. p. 28, pl. xxvi.
Diastopora obelia, Heller, Die Bry. des Adr. Meeres, p. 123.

The adventitious tubules are very abundant; in some parts they are as numerous as the zoœcia.

Hab. Arctic Ocean; Norway, Spitzbergen, Britain, France (*Joliet*); Adriatic, 20–55 fathoms (*H.*); Naples, from 6 fathoms and deeper.

97. *Alecto repens*, Wood.

Diastopora echinata, Reuss, Foss. Polyp. des W. T. p. 52, pl. vii. figs. 14, 15.
Diastopora repens, Smitt, Krit. Fört. 1866, p. 395.

The zoarium is much raised and inflated, with 3–4 zoœcia irregularly arranged. The width of a fully developed branch is 1 millim.; but some branches are thrown off with only one or two cells in a series; and then the branch measures 0·4 millim.

Loc. Miocene: Eisenstadt (*Rss.*). Pliocene: Crag, Castrocaro (*Manz.*). Living: Scandinavia, Finland, Britain (*B.*); Gulf of Kara (*Sm.*); Naples, 20 fathoms.

98. *Alecto repens*, Wood, var.

Nearly all the specimens of *Terebratula vitrea* which I have seen from the neighbourhood of the Bay had long and very slightly raised colonies of *Alecto*. The zoœcia are 1–2-serial, and are rather wider than in the last variety. The

surface is beautifully ornamented with white spots, in the centre of which are the openings of the pore-tubes. In some there is an expansion at the end of the branch; and in these the area of one or two cells is tumid, and the pores in this oœcium are much more numerous than in other parts.

For the present I propose to call this var. *vitriensis*; and as it is from much greater depth than the others, it may be only the deep-water form.

As the Alectos described in the British-Museum catalogue are not yet in the possession of the Museum, I have been unable to make any comparison with these, but do not see how the species are to be divided by the characters there given.

99. *Entalophora proboscidea*, Forbes.

Entalophora attenuata, Reuss, Die foss. Anth. und Bry. von Crosaro, p. 74, pl. xxxvi. figs. 1, 2.

In a very large number dredged up in the Secca (Bay of Naples) there are great variations, some being much thicker than others and with more numerous cells; some show rugosity, which apparently depends mostly on age. In many the ends are clavate. The free ends of the zoœcia measure about 0·15 millim.

Loc. Miocene, Val di Lonte, &c. Shetland seas (*F.*)?; Mediterranean (*M.-Ed.*); Teneriffe and Canaries (*D'Orb.*); Madeira, Adriatic (*H.*); Naples, 40 fathoms, &c. Common.

100. *Entalophora deflexa*, Couch.

Tubulipora deflexa, Couch, Corn. Fauna, iii. p. 107, pl. xix. fig. 4.
Pustulopora deflexa, Johnst. Brit. Zooph. ed. 2, p. 279, pl. xlviii. fig. 5.
Pustulopora clavata, Busk, Crag Polyz. p. 107, pl. xvii. fig. 1.
Pustulopora deflexa, Heller, Die Bry. des Adriat. p. 125.
Entalophora deflexa, Smitt, Floridan Bry. pt. i. p. 11, pl. v. figs. 28–30; Kongl. Svenska Vet.-Ak. Handl. vol. x. 1872.

Zoaria 0·3–0·4 millim. in height. The end of the branch thickens; zoœcial tubes freer and smaller (0·08–0·09 millim.) than the last species.

Loc. Pliocene: Crag. Living: Cornwall, Plymouth (*Johnst.*); Shetland (*Norm.*); Adriatic (*H.*); Florida (*Sm.*); Naples, shallow water, probably about 2 fathoms.

101. *Entalophora rugosa*, D'Orb.

Entalopora rugosa, D'Orb. Pal. Franç. p. 795, tab. 754. figs. 18–20.
Pustulopora rugulosa, Manz. I Brioz. foss. del Miocene d'Austr. ed Ungh. pt. iii. p. 11, tab. x. fig. 38; Denkschr. Ak. Wiss. Wien, xxxviii. 1877.
Pustulopora rugosa, Waters, Bry. from Plioc. of Bruccoli, Manch. Geol. Soc. vol. xiv. p. 481, fig. 15.

Zoarium erect, cylindrical, dividing dichotomously several times. Zoœcia, tubular projecting cells, the tubes and interspaces usually more or less rugose, surface finely punctured.

The cells are closed after a time by a diaphragm across the tube, about the point where it becomes free.

Loc. Chalk, étage 22^{e}, as *rugosa* : Vendôme, Trôot (Loir et Cher), Veules (Seine Inf.). Miocene : Kostel, Lapugy, Wildon, St. Nicolai, Gartschenthal, Steinabrunn, Niederleis, Nussdorf, Grussback. Pliocene : Bruccoli (*A. W.*). Living : Naples, 30–40 fathoms.

102. *Hornera frondiculata*, Lamx.

Hornera frondiculata, Manzoni, I Bri. del Plioc. di Castrocaro, p. 42, pl. vii. fig. 80 ; id. I Bri. foss. del Mioc. d'Austr. ed Ungh. p. 8, pl. vi. fig. 22.

Loc. Miocene : Austria and Hungary. Pliocene : Castrocaro (*M.*), Sceaux, Doué (*Mich.*). Crag : Ficarazzi, Bruccoli, Pruma, Gerace, &c. (Sicily). Living : Adriatic, Mediterranean ; Naples, 40 fathoms and deeper.

103. *Filisparsa tubulosa*, Busk.

Hornera violacea, var. β. *tubulosa*, Busk, Cat. of Mar. Polyz. p. 19, pl. xviii. figs. 1, 4.

Filisparsa, sp., Manzoni, Bry. du Plioc. de Rhodes, p. 69, pl. iii. fig. 18, *a* & *b* ; Mém. de la Soc. Géol. de France, 3^{e} sér. vol. i. pt. ii.

I am indebted to Mr. A. M. Norman for the sight of a true northern *Hornera violacea*, and see that the present form has hardly any thing in common ; but I cannot doubt that it is the var. *tubulosa* of Busk, and therefore retain his specific name. As the museum specimen is not yet returned, I have not had the opportunity of comparison.

The genus *Filisparsa* is, as pointed out by D'Orbigny, intermediate between *Hornera* and *Idmonea* ; and somewhat similar forms are known from the European chalk, Miocene, and Pliocene, and also the Australian Tertiaries. I am, however, somewhat in doubt as to whether the genus will permanently stand.

The zoœcia, which are only upon the front of the branch, are long and free for a great part of their length ; the zoœcial tubes are 0·17 millim. in diameter ; dorsal surface smooth, with fine punctures ; lines of cells and of growth indistinct. Oœcium irregular enlargement of the front of the branch.

Loc. Pliocene : Rhodes. This is very common from 40 fathoms in the Bay of Naples ; and I am surprised it has not been noticed before from the Mediterranean. In habit it much resembles *Entalophora proboscidea*, and perhaps has been overlooked on that account. If we imagine *E. probosci-*

dea with the zoœcia on the front only, we should have the present species.

104. *Discoporella radiata*, Aud. (Pl. XXIV. fig. 11.)

Melobesia radiata, Aud. in Sav. Egypte, p. 60, pl. vi. fig. 3.
Discoporella flosculus, Hincks, Ann. & Mag. Nat. Hist. ser. 3, vol. ix. p. 468, pl. xvi. fig. 3.
Discoporella radiata, Busk, Mar. Polyz. pt. iii. p. 32, pl. xxxiv. fig. 3.
? *Discoporella Houldsworthii*, Busk, *loc. cit.* p. 33, pl. xxx. fig. 4.
Discosparsa patina, Heller, Die Bry. des Adr. p. 122.
? *Discocavea aculeata*, D'Orb. Pal. Fr. p. 958, pl. 776. figs. 5, 8.
Discoporella, sp., Manz. Bry. du Plioc. de Rhodes, Mém. Soc. Géol. de France, 3e sér. vol. i. pt. ii. p. 71, pl. iii. figs. 26, 27.

The peristome of the zoœcial cells is raised on the inner side, and also slightly on the outer. The outer cells are trifid instead of simply acuminate. The cancelli between the rows of cells are formed of ribs connecting the rays, and form an open network.

In most specimens the cancelli appear open; but in well-preserved ones a delicate calcareous cover is found covering the aperture; and this is perforated with about 2–10 holes (fig. 11, *a*). A similar covering is present in a large number of Cyclostomata, but seems to have been overlooked. On the internal walls of the cancelli are delicate hair-like teeth growing from the side. These spines have globular terminations. These occur not only near the surface, but also down the tube; but sometimes near the surface there are as many as six or eight nearly in the same plane (fig. 11, *b*). Similar denticles are to be seen in the British-Museum specimen of *D. Houldsworthii*, Busk; and I have the same in *D. novæ-zelandiæ*, Busk.

The *Defrancia prolifera*, Rss., is composed of coalescent subcolonies resembling *Discoporella radiata*.

Loc. Pliocene: Rhodes (*Manz.*), Bruccoli (Sicily). Living: Adriatic, 20–55 fathoms (*H.*), Mediterranean (*B.*), Devon (*Hincks*), ? Calvados (*D'Orb.*); Naples, abundant on *Laurencia papillosa* and other seaweeds from shallow water; Ceylon (as *D. Houldsworthii*).

105. *Discoporella verrucaria*, Fab.

Discoporella verrucaria, forma *verrucaria*, Smitt, Krit. Fört. öf. Sk. H.-Bry. 1866, p. 405, pl. x. figs. 6, 8, pl. xi. figs. 1, 6.

I have this adnate as a single disk, and a specimen from the same *Pinna* with two confluent colonies, and have also specimens, growing on Bryozoa and other organisms, irregular in shape with small attachment. The disks are about 6–10 millims. The rays are very distinct and raised; near the

centre they are simply acuminate or trifid, while near the circumference in the quincuncial cells they are trifid. In the centre are three or four tumid areas, with ribs at the edge, forming a row of pores round them. These oœcial swellings often extend among the rays; and the slightly funnel-shaped tubes opening out the oœcium are three times as wide as the zoœcial cells.

This in many respects resembles *D. radiata*. It is not the *D. verrucaria* of Manzoni (Bry. foss. Ital. 4ª contr. pl. vi. fig. 33), which may be *Diastopora flabellum*.

Hab. Arctic seas generally, Novaja Semlja (*Sm.*); Scotland; Naples, 40 fathoms and deeper.

106. *Discoporella hispida*, Flem.

Loc. Pliocene: Bruccoli. Living: Scandinavia (*Sm.*); Naples, littoral.

107. *Discoporella mediterranea*, Blainv.

The only two specimens I have are flat on the underside, with a wide attachment. On the upper surface the short rays are raised up in bundles round the circumference. The centre has a thin calcareous papyraceous cover divided into raised irregular and round divisions; at one edge of these cell-like areas there is sometimes a round opening.

I find the front surface so similar to the British-Museum specimen of *Defrancia lucernaria*, Sars, that I am convinced they are very closely allied, and perhaps may be northern and southern varieties.

108. *Radiopora pustulosa*, D'Orb. (Pl. XXIV. fig. 15.)

Radiopora pustulosa, D'Orb. Prodr. p. 176; et Pal. Franç. p. 994, pl. 649. figs. 1–4.

Rays uniserial, mouths of cells and cancelli of the same size; peristome of radial cells raised, and acute (*a*) on the inner side (the side nearest the centre of the zoarium); peristome of cells beyond the regular rays trifid (*b*), the centre prong much the longest, cells confluent.

It may also be the *R. simplex* of Busk; but from the small fragment it is difficult to decide. Two specimens appear quite thin, as if only a thin covering; another is 2–4 millims. thick, and the broken surface shows long zoœcial and cancelli-tubes, which, however, in the lower half are divided across the axis by septa, giving this part a somewhat cellular appearance; but no separate layers are distinguishable. The surface of the colony is irregularly raised and depressed, depending

on the substratum; each subcolony is slightly raised, with the rays elevated above the central portion.

Loc. Upper Greensand (étage 20e), Le Havre, l'île Madame. Living: Naples, brought on a stone with *Gorgonia* &c. which must have come from a depth of over 50 fathoms.

109. *Reticulipora dorsalis*, nov. (Pl. XXIII. figs. 5–11.)

Reticulipora nummulitorum, Smitt, Krit. Fört. öf. Sk. 1866, p. 433, pl. ix. D. 1, 2, pl. x. A, B, C.

This elegant species commences as a flat disk, or *Diastopora* stage; soon one or more radiating projections are formed, which become erect foliations (fig. 8), and from which dichotomously and irregularly further foliations spring (fig. 10); sometimes they curve over, and several branches may point in the same direction (fig. 7). There are on both faces of the foliations series of cells, alternate; the series of cells are usually very regular, but occasionally the rows can scarcely be distinguished. The number of zoœcia in a series diminishes towards the ends of the branches, which are sometimes quite pointed. The dorsal surface is rounded, with cells immersed, often with faint median ridge; on the dorsal surface all the cells I have examined have a cover with projecting tubule (fig. 5) in the centre; and on other cells they are very frequent. Similar covers are found on many of the Cyclostomata; but, from the constancy on such a species as the present, I doubt if their signification is fully understood. I have not any specimens which could be called reticulate, though the foliations occasionally join; but in the British Museum there is one from Algiers, collected by J. Y. Johnson, as distinctly reticulate as any from the chalk (see fig. 9).

This Algerian specimen is first a wide irregular *Diastopora* from which a wide foliation grows. This resembles the fossil from the Pliocene of Bruccoli which I called *Mesenteripora*, sp. The mode in which it develops in the perfect stage (fig. 9) is not shown; but, as far as I have had the opportunity of examining this, it appears to be the same as the Naples species, though growing somewhat differently.

This is closely allied to *Reticulipora nummulitorum*, D'Orb., *R. papyracea*, D'Orb., and *Idmonea compressa*, Rss. & Manzoni; but the dorsal surface distinguishes it.

The calcareous septum distinguishes it from *Idmonea*; but I am not sure that it should not be united to *Mesenteripora*. At one time I thought it was a variety of *M. meandrina*; but this was upon insufficient grounds.

Fig. 6 is the end *a* of fig. 7, more magnified. Fig. 11 shows a transverse section.

110. *Frondipora verrucosa*, Lamx.
(Pl. XXIV. figs. 1–7.)

Madrépore rameux &c., Marsigli, Hist. Ph. de la Mer, p. 150, pl. xxxiv. figs. 165, 166.
Krustensterna verrucosa, Lamx. Expos. Méth. p. 41, pl. lxxiv. figs. 10–13 (juv.), pl. xxvi. fig. 5.
Frondipora reticulata, Blainv. Man. d'Actin. p. 406, pl. lxix. fig. 1; Smitt, *loc. cit.* 1866, var. α and β; Busk, Mar. Polyz. pt. iii. p. 38, pl. xxi.
Frondipora verrucosa, Busk, *loc. cit.* p. 39.
?*Frondipora Marsiglii*, Mich. Icon. Zooph. p. 68, pl. xiv. fig. 4.

Fig. 7 represents a colony growing on a shell. It is about 2 inches high and 3 wide. There is first an irregular expansion; and then a cup has been formed (of which the detailed irregularities are not shown); and it is specially noteworthy that the poriferous face is on the outside, whereas in *Retepora* it is inside. This same mode of growth is also exhibited in a somewhat less perfect specimen; but it is not quite clear how it takes place, since in the young (figs. 4, 5, 6) the poriferous face is seen to be internal (in figs. 4 and 5 the top should be shown flatter).

This is the common Mediterranean species; but when worn the fasciculi appear confluent, and ultimately the whole surface seems poriferous; and from my specimens I do not doubt that *F. reticulata* and *verrucosa* are the same.

The young colonies are in some stages much like the *Fasciculipora ramosa*, D'Orb.; and it appears very probable that many species and some genera have been formed from the young of this and allied groups, though of course the complete growth of one genus may resemble the young of another.

Fungella, Hag., looks like a young stage; and *Fungella trifida*, Busk, from the Crag, resembles a stage a little younger than figs. 4 and 5.

Near the base the surface is marked with "hexagonal areolæ," while the rest of the surface is striated and finely punctured.

CTENOSTOMATA.

111. *Pherusa tubulosa*, Ell. & Sol. (Pl. XXIV. figs. 13, 14.)

Flustra tubulosa, Ellis & Sol. Nat. Hist. of Zooph. p. 17. no. 11.
Pherusa tubulosa, Lamx. Hist. des Polyp. p. 119, pl. ii. fig. 1, et Expos. Méth. p. 3, pl. lxiv. figs. 12–14.
Pherusa tubulosa, Heller, Die Bry. des Adriat. p. 93.

The membranous zoaria grow as flexible fronds, usually erect, but also decumbent, forming an orbicular lobed expansion in the centre of which grow other fronds. The ends of the zoœcia are raised; and when the polypide is withdrawn the end appears quadrangular; when the polypide is exserted,

the tube is much lengthened by the sheath of the polypide, which is continuous with the outer cover. The tentacles are numerous, thirty to forty. This species being semitransparent, the position of the polypides can be seen, as figured; and it would probably well repay physiological examination in detail.

Hab. Dominica (*Ell.*); Brazil; Archipel de la Chine (*Tilesius*?, teste *Lamour.*); Adriatic (*Hell.*); Naples, on sea-weed, from slight depths, rare.

There is a specimen in the British Museum with similar zoœcia; but the fronds are narrow, as in *Flustra truncata*. As my attention was directed to calcareous forms, I have but few Ctenostomata, and am not in a position to discuss that group.

Zoobotryon pellucidus, Ehr., has been found in great abundance in the Bay; but during my stay none was brought in. The *Entoprocta* from Naples have been physiologically studied by Nitsche and others; *Pedicellina echinata* is not uncommon; of *Loxosoma* four species (*Kefersteinii*, Clap.; *alata*, Barr.; *raja*, O. Sch.; *neapolitana*, Kow.) are known from the Bay.

Since writing Part I., I have found among the material brought home:—112. *Lepralia Hyndmanni*; 113. *Caberea Boryi*, Aud.

Although the total number is now large, I am convinced it could be most materially increased; for when I was in Naples I had none of the most important works to refer to, and was not sufficiently acquainted with the Bryozoan characters; consequently doubtless many species escaped my attention. And a collection made in one winter would of necessity be imperfect; for forms sometimes abundant, at others are not met with.

The wide distribution of many species must strike any one making careful comparison—and also the large number which occur fossil, not only in the younger Tertiaries, but also in the Miocene and Eocene. Within a day's row from Naples there is no water deeper than 40 fathoms; but at this depth in the Secca the dredge came up full of sponges, Holothuria, &c., and a great number of Bryozoa, mostly *Hornera*, *Idmonea*, *Entalophora*, and *Eschara*. These apparently resemble in facies the fauna found in most places at a greater depth. And this is of great importance geologically; for the conclusion seems to be that, in a closed sea like the Mediterranean, where there is no tide, these animals can flourish at a less depth than they would with more disturbance of the water. It is therefore not justifiable to conclude that, where a plentiful fossil Bryozoan fauna occurs, of necessity the depth was very great.

This paper has become much longer than was intended, and I must not add to it a long list of friends to whom I am indebted for assistance; but I cannot close without specially thanking Dr. Hugo Eisig, the acting director of Dr. Dohrn's Aquarium, whose knowledge of the locality and constant kindness enabled me in a short time to collect material for the present communication.

XXXII.—*On a new Genus of Pycnogon and a Variety of* Pycnogonum littorale *from Japan.* By Henry H. Slater, B.A., F.Z.S.

By the kindness of Dr. Günther I have recently been enabled to examine all the Pycnogonoidea in the British Museum; and he has also been good enough to permit me to describe two species from Japan, which form part of the collection.

The first is a remarkable one allied to *Zetes* (Kröyer), but possessing distinct generic characters. It was recognized by Mr. Miers, of the Zoological Department, as new, and was provisionally named by him *Parazetes*, which name I gladly adopt.

Parazetes, Slater, gen. nov.

Corpus gracile. Rostrum pedunculatum, ad basim valde constrictum, ad apicem paulatim attenuatum. Appendices primæ biarticulatæ, non cheliformes; secundæ 9-articulatæ, pedibus ovigeris 10-articulatis. Segmentum primum corporis processum tenuem, quasi collum, usque ad rostrum antice provehens. Abdomen clavatum.

Body slender; rostrum pedunculated, broad in the centre, gently decreasing in diameter towards its distal extremity, which is minutely four-cleft; first pair of appendages (maxillipeds) 2-jointed, not chelate; second pair (palpi) 9-jointed; ovigerous legs 10-jointed; first (cephalic) segment sending forward a long slender neck-like process towards the rostrum, on the middle of which the oculiferous tubercle is seated; legs smooth and slender.

Parazetes auchenicus, Slater, n. sp.

Animal slender; rostrum resembling that of *Zetes* (Kröyer in Gaim. Voy. en Scand. Lap. &c. Crust. pl. 38. fig. 1 *a–g*), fusiform; it also hangs down in the same manner as that of *Zetes* (ib. fig. 1, *b*), but is distinctly four-cleft at its apex—a